



UNITED STATES PATENT AND TRADEMARK OFFICE

68

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,830	02/19/2002	Kenji Tsukada	Q67368	6300
7590	01/13/2004		EXAMINER	
Sughrue Mion Zinn Macpeak & Seas 2100 Pennsylvania Avenue NW Washington, DC 20037-3202			DUDDING, ALFRED E	
			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 01/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/049,830

Applicant(s)

TSUKADA ET AL.

Examiner

Alfred E. Dudding

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☒ Claim(s) 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☒ Interview Summary (PTO-413) Paper No(s). 7.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 – 16, and 18 - 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook (U.S. 6,155,664 A) in view of Anderson et al. (U.S. 6,044,694 A).

Cook discloses a printing apparatus and a method of controlling an ink jet recording apparatus on which a liquid container is able to be detachably mounted, Figure 1, element 2 (printhead cartridge), said liquid container having a container body containing a liquid supplied to a recording head discharging an ink droplet from a nozzle opening, Figure 1, element 24 (printhead), a liquid supplying opening for supplying said liquid outside of said container body, Figure 1, (as evidenced by supply line 7). Cook teaches controlling said ink jet recording apparatus so that said ink jet recording apparatus is set in an operable state or in a non-operable state based on a result of said judging step or in a case that said ink jet recording apparatus is in said non-operable state, selecting either to maintain said non-operable state of said ink jet recording apparatus or to change said non-operable state of said ink jet recording apparatus to said operable state, Figure 5, flow chart of elements 120, 130, 132, and 133, indicating cessation of printing operations when ink supply is low. Cook discloses a method for

Art Unit: 2853

controlling an ink jet recording apparatus wherein the detecting step is executed at the time that the liquid container is mounted on the ink jet recording apparatus, Figure 3, steps 54 – 60.

Cook fails to teach the claimed invention of a piezoelectric device for detecting said liquid within said container body, comprising the steps of detecting a characteristic value of said piezoelectric device by a detection section provided inside or outside of said ink jet recording apparatus; judging whether or not said characteristic value satisfies a predetermined condition by a judging section provided inside or outside of said ink jet recording apparatus or an oscillating section of the piezoelectric device is positioned just below an initial liquid level of said liquid.

Anderson et al. disclose plural piezoelectric devices for detecting said liquid within said container body, Figure 2, elements 50, 52, and 54 (piezoelectric detectors), comprising the steps of detecting a characteristic value of said piezoelectric device by a detection section provided inside or outside of said ink jet recording apparatus (Figure 2 shows bender portion of piezoelectric detector inside the container), Column 2, lines 28 – 52 (characteristic of the piezoelectric detector), judging whether or not said characteristic value satisfies a predetermined condition by a judging section provided inside or outside of said ink jet recording apparatus, Abstract, lines 8 – 11. Wilson et al. teach a method of controlling an ink jet recording apparatus, wherein said characteristic value is an element characteristic value of a piezoelectric element of said piezoelectric device, Column 2, lines 34 – 42 cite measuring frequency, impedance and Q characteristics of the piezoelectric detection device can. Anderson et al. discloses wherein said detection section detects oscillation characteristic values of said at least two piezoelectric devices in said detecting step, and wherein said judging section judges a consumption state of said liquid

Art Unit: 2853

within said liquid container based on a relative condition of mutual oscillation characteristic values of said at least two piezoelectric devices in said judging step, Column 4, lines 4 – 15. Anderson et al. teach that said additional piezoelectric device is positioned nearby a bottom surface of said container body, Figure 2, element 50, clearly seen. Anderson et al. teach that said additional piezoelectric device is positioned nearby said piezoelectric device, an initial liquid level when said liquid within said container body is not consumed being located between said piezoelectric device and said additional piezoelectric device, Figure 2, element 32 (liquid), elements 50 and 54 (piezoelectric detectors). Anderson et al. disclose that an oscillating section of the piezoelectric device is positioned just below an initial liquid level of said liquid, Figure 2, element 54.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the piezoelectric detector of Anderson et al. in the recording apparatus (ink jet printer of Cook. in order to detect ink levels, viscosity and density of the ink, and shutting down printing operations to prevent possible damage to a printhead.

3. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cook in view of Anderson et al. as applied to claims 1 and 16 above, and further in view of Murray et al. (U.S. 5,610,635 A).

The combination of Cook and Anderson et al. teach all of the limitations of the claimed invention except an ink jet recording apparatus further comprising a storage device capable of storing at least a characteristic value of the piezoelectric detector.

Murray et al. discloses a storage device, Figure 5, element 48 that can store a Characteristic value of the piezoelectric detector, Column 9, lines 66 –67, Column 10, lines 1 –

Art Unit: 2853

17.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the storage device of Murray et al. in the combined invention of Cook and Anderson et al. In order to reduce size of printer, and keep information pertinent to the ink container local to the printer.

Allowable Subject Matter

4. Claim 25 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

A search of prior art did not cite a vibrating region of said piezoelectric device extends from an initial liquid level of said liquid before said liquid is consumed, to a bottom surface of said liquid container as claimed in the limitations of claim 25.

Art Unit: 2853

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alfred Dudding whose telephone number is (703) 308-6082. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier, AU 2853, can be reached at (703) 308-4896. The fax phone number for this Group is are (703) 872-9306. The examiner's fax phone number is (703) 746-4390 (unofficial correspondence only).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (703) 308-0956.



Stephen D. Meier
Primary Examiner

Alfred Dudding

ad

1-5-04